

SNOQUALMIE RIVER CED RETROFIT

FEBRUARY 16, 2005

INTRODUCTION

The Snoqualmie River retrofit site is along State Route (SR) 202 at Falls City, just upstream of the SR 202/56 bridge crossing, and immediately downstream from the confluence with the Raging River. This site is on the right bank of the Snoqualmie River and consisted of a 150- to 200-foot section of unprotected bank located on the outside of the meander bend, just above the bridge abutment riprap. SR 202 is a two-lane route that is used by both commercial and residential traffic.

THE CED PROBLEM

The site was listed as a CED retrofit site due to repetitive repairs to fix erosion along the bank of the river. Rock revetments that line the bank upstream and downstream of the site have reduced roughness and increased shear stresses, especially at the upstream transition between the armored and previous unarmored bank. Land clearing and previous failures had removed most of the vegetative structure, reducing the bank's ability to resist erosion. The growth of the gravel bar along the opposite bank has also increased the curvature of what was once a relatively straight river segment, increasing shear stress against the right bank. Bank erosion was posing a threat to SR 202 and was threatening to flank the armor for the bridge abutment.

FISH UTILIZATION & HABITAT AVAILABILITY

This reach of the river supports six species of salmon: pink, chum, steelhead, Puget Sound Chinook, Puget Sound/Strait of Georgia coho, and bull trout. The Chinook, coho, and bull trout are currently listed under the Endangered Species Act.

Habitat conditions within the watershed have been rated as degraded for large woody debris (LWD). The degraded riparian zone provides few opportunities for LWD recruitment. Logging, residential and recreational development, and road construction have reduced the amount of mature forested riparian area. LWD has also been removed within the channel in the watershed for navigation and flood protection.

RETROFIT PROJECT

The site and reach analysis along with the construction of this project was completed by project funds provided by WSDOT. The construction to retrofit the Snoqualmie River site was completed in the fall of 2004. The Integrated Streambank Protection Guidelines were used to help design the solution to the continued erosion problem along with enhancing the fish habitat and other ecological functions of this reach of the river.

Buried woody groins were used at this site to fix the erosion problem. The groins were installed between the eroding bank and SR 202. As the channel erodes and exposes the buried groins, roughness will be created along the new bank and the thalweg alignment along the groins' tips will be maintained. The woody debris along with the scour holes that will form at the tip of the groins will increase salmonid habitat within this reach. The top of the bank was planted with woody vegetation to help with bank stabilization and restore lost riparian function. The reestablishment of riparian vegetation at the site provided functional self-mitigation for the project itself.

These methods had limited impact on the aquatic resources during construction due to exclusion of equipment and structures in the active river channel. Due to regulatory, habitat, flooding, and hydraulic concerns, this was a key design criteria during construction. This reach of the river is also a known location of significant spawning areas for threatened Chinook salmon.



Figure 1. Snoqualmie River CED site showing bank erosion prior to retrofit project construction.



Figure 2. Snoqualmie River CED retrofit project showing bank erosion prior to retrofit project construction.



Figure 3. Snoqualmie River CED retrofit project during construction (October 27, 2004).



Figure 4. Snoqualmie River CED retrofit project during construction (October 27, 2004).



Figure 5. Snoqualmie River CED retrofit project during construction (October 27, 2004).